

What Is Claimed Is:

1 1. A method for creating a mask-programmable module from
2 standard cells, comprising:
3 specifying characteristics of an end design;
4 selecting a plurality of standard cells from a standard cell library based on
5 the characteristics of the end design;
6 combining the plurality of standard cells into a mask-programmable
7 module, wherein instances of the mask-programmable module are repeated to
8 form a mask-programmable fabric; and
9 designing a mask-programmable interconnect to match the mask-
10 programmable module, whereby connections within the mask-programmable
11 module and between mask-programmable modules can be generated by
12 programming the mask-programmable interconnect.

1 2. The method of claim 1, wherein the mask-programmable modules
2 and the mask-programmable interconnect that make up the mask-programmable
3 fabric can be programmed by changing inter-metal via layers and/or metal layers.

1 3. The method of claim 1, wherein combining the plurality of
2 standard cells into a mask-programmable module additionally involves defining
3 connections between standards cells within the mask-programmable module.

1 4. The method of claim 1, further comprising generating views for the
2 mask-programmable module, wherein the views can include:
3 a physical view that specifies connectivity within the mask-programmable
4 module, including connectively with pins in the mask-programmable module;

5 a logical view that specifies logical relationships between signals in the
6 mask-programmable module; and
7 a timing view that specifies timing relationships within the mask-
8 programmable module.

1 5. The method of claim 4, wherein generating the views involves
2 using pre-existing information about the plurality of the standard cells from the
3 standard cell library to generate the views for the mask-programmable module.

1 6. The method of claim 1, further comprising:
2 receiving a high-level design for an integrated circuit; and
3 performing a synthesis operation on the high-level design to generate a
4 netlist for the high-level design that contains references to mask-programmable
5 modules.

1 7. The method of claim 6, further comprising performing a placement
2 operation and a routing operation on the netlist to produce a layout for the
3 integrated circuit.

1 8. The method of claim 7, wherein performing the routing operation
2 involves programming the mask-programmable modules and mask-programmable
3 interconnect.

1 9. A computer-readable storage medium storing instructions that
2 when executed by a computer cause the computer to perform a method for
3 creating a mask-programmable module from standard cells, the method
4 comprising:

5 specifying characteristics of an end design;
6 selecting a plurality of standard cells from a standard cell library based on
7 the characteristics of the end design;
8 combining the plurality of standard cells into a mask-programmable
9 module, wherein instances of the mask-programmable module are repeated to
10 form a mask-programmable fabric; and
11 designing a mask-programmable interconnect to match the mask-
12 programmable module, whereby connections within the mask-programmable
13 module and between mask-programmable modules can be generated by
14 programming the mask-programmable interconnect.

1 10. The computer-readable storage medium of claim 9, wherein the
2 mask-programmable modules and the mask-programmable interconnect that make
3 up the mask-programmable fabric can be programmed by changing inter-metal via
4 layers and/or metal layers.

1 11. The computer-readable storage medium of claim 9, wherein
2 combining the plurality of standard cells into a mask-programmable module
3 additionally involves defining connections between standards cells within the
4 mask-programmable module.

1 12. The computer-readable storage medium of claim 9, the method
2 further comprising generating views for the mask-programmable module, wherein
3 the views can include:
4 a physical view that specifies connectivity within the mask-programmable
5 module, including connectively with pins in the mask-programmable module;

6 a logical view that specifies logical relationships between signals in the
7 mask-programmable module; and
8 a timing view that specifies timing relationships within the mask-
9 programmable module.

1 13. The computer-readable storage medium of claim 12, wherein
2 generating the views involves using pre-existing information about the plurality of
3 the standard cells from the standard cell library to generate the views for the
4 mask-programmable module.

1 14. The computer-readable storage medium of claim 9, the method
2 further comprising:
3 receiving a high-level design for an integrated circuit; and
4 performing a synthesis operation on the high-level design to generate a
5 netlist for the high-level design that contains references to mask-programmable
6 modules.

1 15. The computer-readable storage medium of claim 14, the method
2 further comprising performing a placement operation and a routing operation on
3 the netlist to produce a layout for the integrated circuit.

1 16. The computer-readable storage medium of claim 15, wherein
2 performing the routing operation involves programming the mask-programmable
3 modules and mask-programmable interconnect.

1 17. An apparatus for creating a mask-programmable module from
2 standard cells, comprising:

3 a specifying mechanism configured to specify characteristics of an end
4 design;
5 a selecting mechanism configured to select a plurality of standard cells
6 from a standard cell library based on the characteristics of the end design;
7 a combining mechanism configured to combine the plurality of standard
8 cells into a mask-programmable module, wherein instances of the mask-
9 programmable module are repeated to form a mask-programmable fabric; and
10 a designing mechanism configured to design a mask-programmable
11 interconnect to match the mask-programmable module, whereby connections
12 within the mask-programmable module and between mask-programmable
13 modules can be generated by programming the mask-programmable interconnect

1 18. The apparatus of claim 17, wherein functions of the mask-
2 programmable modules and the mask-programmable interconnect that make up
3 the mask-programmable fabric can be programmed by changing inter-metal via
4 layers and/or metal layers.

1 19. The apparatus of claim 17, wherein combining the plurality of
2 standard cells into a mask-programmable module additionally involves defining
3 connections between standards cells within the mask-programmable module.

1 20. The apparatus of claim 17, further comprising a generating
2 mechanism configured to generate views for the mask-programmable module,
3 wherein the views can include:
4 a physical view that specifies connectivity within the mask-programmable
5 module, including connectively with pins in the mask-programmable module;

6 a logical view that specifies logical relationships between signals in the
7 mask-programmable module; and
8 a timing view that specifies timing relationships within the mask-
9 programmable module.

1 21. The apparatus of claim 20, wherein generating the views involves
2 using pre-existing information about the plurality of the standard cells from the
3 standard cell library to generate the views for the mask-programmable module.

1 22. The apparatus of claim 17, further comprising:
2 a receiving mechanism configured to receive a high-level design for an
3 integrated circuit; and
4 a synthesis mechanism configured to perform a synthesis operation on the
5 high-level design to generate a netlist for the high-level design that contains
6 references to mask-programmable modules.

1 23. The apparatus of claim 22, further comprising a place-and-route
2 mechanism configured to perform a placement operation and a routing operation
3 on the netlist to produce a layout for the integrated circuit.

1 24. The apparatus of claim 23, wherein performing the routing
2 operation involves programming the mask-programmable modules and mask-
3 programmable interconnect.